Broward County Water Quality Regulations: Current Context for Historical Standards

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Presentation Outline

- What is the history of water quality standards?
- What are the local regulations?
- What are the resources of interest?
- How do local standards influence reuse options?

State of Florida – Classification System

- The State of Florida maintains a classification system for water bodies (Class I – V).
- This means the water quality in these water bodies must support the highest use achieved since 1975.
- Surface waters in Broward County, along with 99% of the water bodies in the state of Florida are designated Class III, or Fishable/Swimmable.

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State of Florida
Water Quality Protection

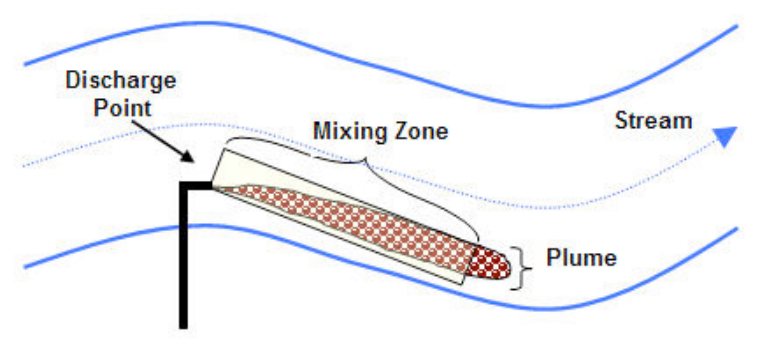
- State maintains narrative standards for nutrients with an antidegradation policy

- Approach to permitting is to establish a water quality based effluent limitation (QBEL) to determine the maximum amount of a pollutant that can be assimilated without causing degradation

State of Florida
Water Quality Protection

- QBEL allows for a mixing zone, within which water quality may be degraded.

- Florida's 2008 Integrated Report indicates that 1,000 miles of rivers and streams, 350,000 acres of lakes, and 900 square miles of estuaries are impaired for nutrients.



- According to the EPA, the number is likely higher as many waters currently classified as unassessed may also be impaired.

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Broward Water Quality Protection

- County achieves water quality protection with the application of numerical water quality standards for nutrients, similar to the approach advocated by the USEPA
- Standards apply to the discharge effluent

	Surface Water	Ground Water
Nitrogen	1.5 mg/l	10 mg/l
Phosphorus	20 ppb (total)	10 ppb (PO_4)

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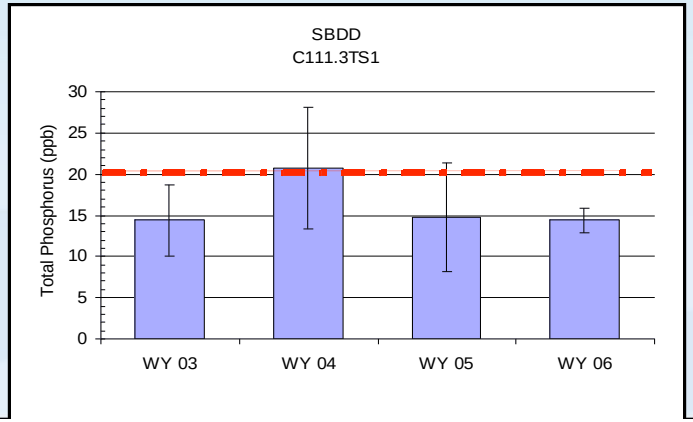
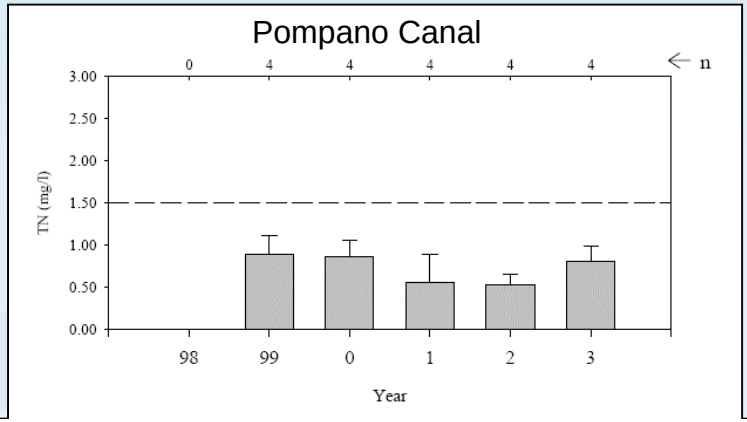
Development of Broward's Standards

- Standards were developed following comprehensive environmental and literature review
- Standards reflect natural background nutrient concentrations of surface and ground waters
- Technical reports and data substantiate these findings





Significance in Application

- Outcome of the County's licensing process using numeric criteria is more certain and predictable.
- County's process better prevents water quality degradation associated with point source discharges and cumulative nutrient loading.
- EPA has determined that numeric nutrient criteria are necessary in the State of Florida and allow for broad, effective and expeditious protection of designated uses.

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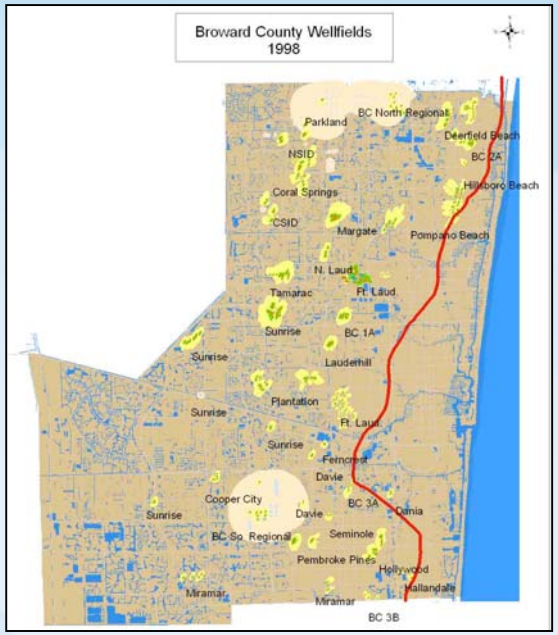
Additional Water Quality Regulations

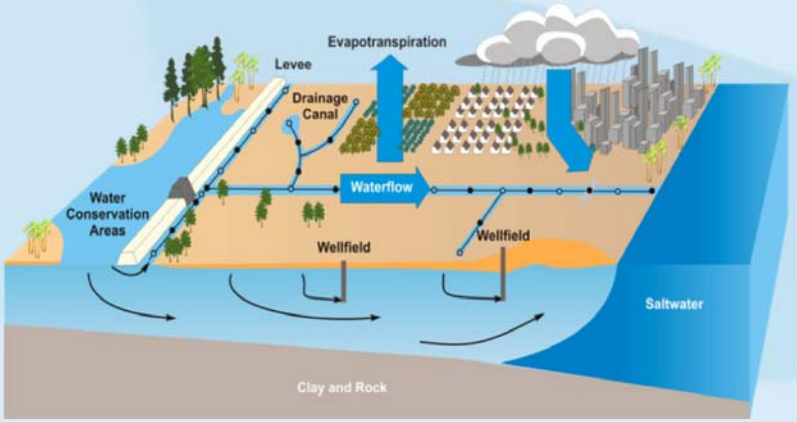
- Chapter 27 Broward Code of Ordinances prohibits any new non-domestic (industrial) discharges to surface waters
- Broward's surface water management licensing requires the removal of 80% of pollutants as part of any new development and redevelopment
- 10 years of National Pollutant Discharge Elimination System (NPDES) permit compliance in partnership with local governments
- Wellfield Protection Program



Broward's Unique Hydrogeology

- Canals offer a direct connection between our surface waters and groundwater

- Water moves quickly through the permeable Biscayne Aquifer, so that there is little separation time between points of recharge and points of discharge and/or withdrawal



- Water quality standards offer protection of both groundwaters and surface waters with both public health and environmental benefits

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Protecting the Everglades

- Nutrient criterion for Everglades is established at 10 ppb phosphorus.
- Broward County is a primary source of urban discharge and phosphorus loading to the Everglades water conservation areas.
- Reductions in phosphorus pollution and loading to the county's surface water has been and will continue to be a priority.

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Protecting our Reefs

- Freshwater discharges are a major source of nutrients to coastal waters affecting water quality and habitat.
- Nutrients support algal growth and blooms, reducing light penetration and degrading reef health.
- Nutrient loads from inlets are thought to be orders-of-magnitude greater than those associated with the ocean outfalls.
- In implementing the 2008 legislation we need to avoid transfer of nutrient loads to the nearshore environment, where impacts can be compounded.

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Water Quality Education and Outreach

- NatureScape Broward Programs and Certification
- Know the Flow Courses
- Non ECP Basin Programming
- Environmental Partnership with Broward Schools
- Water Matters Day
- Professional Training and Certifications
- Broward Everglades Working Group

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NatureScape BROWARD

Broward Today

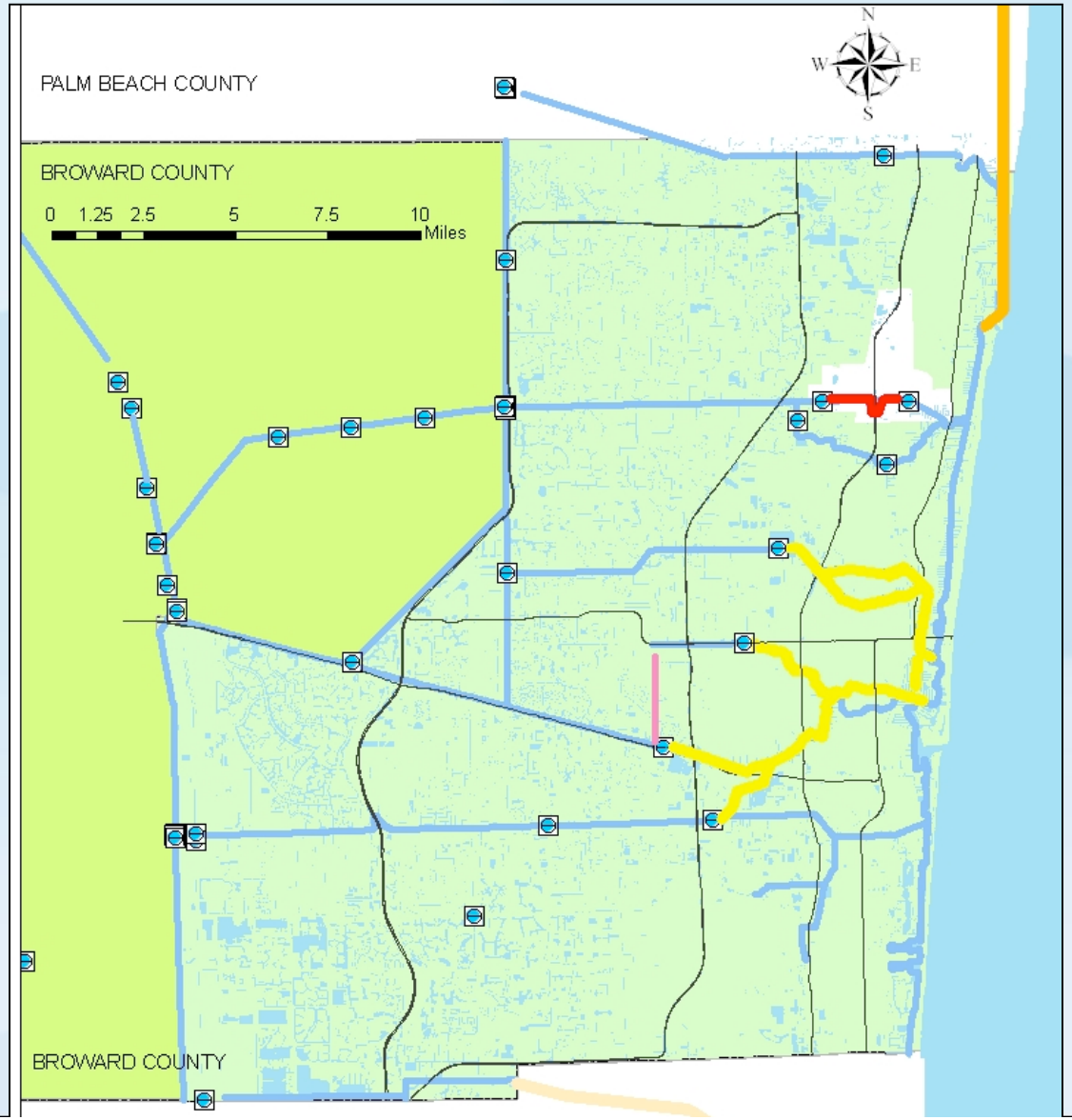
- As a result of federal legislation and the County's regulations, we have virtually eliminated point source discharges to Broward's surface waters and groundwaters.

- The few discharges that remain are expected to be addressed in forthcoming amendments to Chapter 27, Article V of the Broward County Code of Ordinances.

- Today, the primary issue of concern, as in other parts of the United States, is non point source pollution.

Our Goal: Prevent Additional Impairments

- Intercoastal Waterway - north of Hillsboro Inlet
- Pompano Canal
- Middle River, Las Olas Isles, New River (North and South Forks)
- East Holloway Canal
- C-9 Canal East (in Miami-Dade)



How do Impairments Affect Us?

- Recovery strategies involve the establishment of TMDLs for various pollutants and Basin Management Action Plans.
- Once a TMDL has been established, **NO** additional pollutant loads can be received by the water body and reductions must be achieved.
- The cost of implementation is great, estimated at ca. $8,000 per acre for stormwater BMPs and regional treatment facilities.

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But, the Cost is Even Greater

- Waterbody impairments mean significant costs for local governments and the economy.

- Costs are realized not only in the form of pollutant load reductions but resource impacts (e.g., reefs, tourism, fisheries).

- For example, the economic contributions of Broward's reefs are valued at $1.3 billion annually and support 36,000 jobs.

What is our Outlook?

- Fortunately, we have only a few waterbody impairments and with existing measures we expect to largely avoid additional impairments (e.g., Pompano canal).
- Unfortunately, assessment of the coastal environment may result in the identification of additional impairments for Broward County.
- The point is, we stand to gain a great deal by investing in the protection of our environmental resources.

What about Water Quality and Wastewater Reuse?

- The need to develop alternative water supplies and recycle wastewater will require investment in reuse technologies.
- Potential applications for treated wastewater include irrigation, industrial, surface and groundwater recharge.
- Secondarily treated wastewater is high in nutrients (nitrogen and phosphorus).

- Broward County's water quality standards will require the use of advanced treatment technologies and reverse osmosis to achieve the necessary level of nutrient removal.

Wastewater Reuse and RO

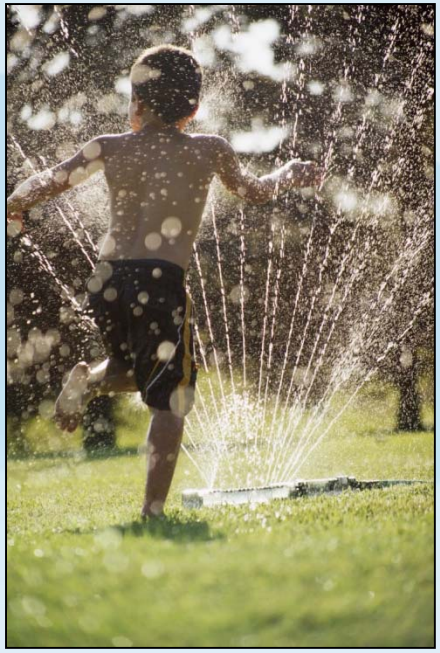
- The best available technology in wastewater treatment includes microfiltration, RO and disinfection.

- RO treatment is required to achieve the County's water quality standards and has the added benefit of removing microconstituents and other pollutants of concern present in wastewater streams RO Animation.

- RO treatment is required for groundwater recharge projects in California and will be part of the aquifer recharge project in Miami Dade.

How Can we Justify the Cost of RO?

- The precedent has been established with regard to treatment technologies and potable reuse.
- Public acceptance of reclaimed projects will be greatest where water quality is not perceived to have been compromised.
- The most successful reuse projects will be those that we can all support



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Conclusions

- Broward County's water quality standards are based on natural background concentrations.
- Environmental protections provided with these standards are evident in water quality data and the environment.
- Environmental protection does not preclude the development of diverse and viable reclaimed wastewater projects.
- Continued adherence to current water quality regulations will provide lasting benefits from an environmental, economic, and public relations standpoint.

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Questions?

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